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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,928	10/22/2003	Dong-Ho Han	P16829	6901
28062	7590	10/05/2005	EXAMINER	
BUCKLEY, MASCHOFF, TALWALKAR LLC			LE, THAO X	
5 ELM STREET			ART UNIT	PAPER NUMBER
NEW CANAAN, CT 06840			2814	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

E/c

Office Action Summary

Application No.

10/690,928

Applicant(s)

HAN ET AL.

Examiner

Thao X. Le

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-7 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-7 and 29 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 2-5, 7 and 29 are rejected under 35 U.S.C. 103(a) as being obvious over US 2002/0048137 to Williams et al. in view of US 6236572 to Teshome et al.

Regarding claim 2, Brandt discloses an apparatus in fig. 2 comprising: a substrate 22 [0021], a pair of signal traces 24 [0021], formed directly on the substrate 22 and spaced from each other; a filler material 14 [0014] directly on the substrate 22 and between the signal traces 24, the filler material 24 having a dielectric constant that is higher than a dielectric constant of a material of which the substrate (PCB = dielectric

Art Unit: 2814

about 4.5 while the layer 14 comprise ceramic-filled resin) is formed [0013], [0015], [0018], and [0021].

But, Williams does not disclose an apparatus comprises a solder mask layer on the signal traces and on the filler material, the dielectric constant of the filler material being higher than a dielectric constant of the solder mask layer.

However, Teshome discloses an apparatus in fig. 6A comprises a solder mask layer 154 on the signal traces 160 directly on the FR4 substrate 156, column 6 line 3, and on the filler material 134, column 5 line 16. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the solder mask layer teaching of Teshome with Williams, because it would have provided the protection to the conductive layer and control the flow of the solder as taught by Teshome, column 5 lines 40-43.

With respect to 'the dielectric constant of the filler material being higher than a dielectric constant of the solder mask layer', it would be obvious that the filler material 14 of Williams containing ceramic-filled resin would have higher dielectric constant than a dielectric constant of the solder mask layer 154 of Teshome, because the dielectric constant of solder mask would be reasonably assumed around 4.5 or similar to that of PCB

Regarding claim 3, Williams discloses the apparatus wherein the substrate 22 includes a resin in which fiber are embedded [0006], the dielectric constant of the filler 14 material being higher than a dielectric constant of the resin [0014].

Regarding claim 4, Williams discloses the apparatus wherein the signal traces 24 are formed of copper [0021].

Regarding claim 5, Williams discloses the apparatus wherein the filler material 14 substantially fills a space between the signal traces 24, wherein the filler material 120 has a height that is substantially equal to a height of the signal traces, fig. 6.

Regarding claim 7, Williams discloses the apparatus wherein the filler material 14 has a dielectric constant in excess of 4.

The layer 14 has higher dielectric constant comprising polymer and ceramic-filled. Such material obviously would have dielectric higher than 4 or higher than the dielectric constant of PCB substrate 22.

4. Claims 6 and 29 are rejected under 35 U.S.C. 103(a) as being obvious over US 2002/0048137 to Williams et al. and US 6236572 to Teshome et al. as applied in the claims 2-5 above and further in view of US 6068782 to Brant et al.

Regarding claims 6 and 29, Williams does not disclose the filler material has a height that is substantially equal to the height of the signal line and filler material includes polyvinylidene difluoride (PVDF).

However, Brandt discloses an apparatus wherein the filler material 120 has a height that is substantially equal to the height of the signal line 190, fig. 6. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the teaching of Brandt with Williams's device to create different configuration of embedded capacitor for intended use, MPEP 2144.07. Furthermore, the Applicant has no support data, which convinces that

the particular claimed configuration is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces. In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3,24 (USSC 1878).

With respect to 'filler material includes polyvinylidene difluoride (PVDF)', Brandt discloses the capacitor dielectric can be a polymer and ceramic composite wherein the polymer comprises epoxy, polyimide, PVDF, col. 4 lines 18-23. At the time of the invention was made; it would have been obvious to one of ordinary skill in the art to use the PVDF teaching of Brand to replace the epoxy polymer of Williams, because such material substitution would have been considered a mere substitution of art-recognized equivalent values, MPEP 2144.06

Response to Arguments

5. Applicant's arguments filed on 02 Sept 2005 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

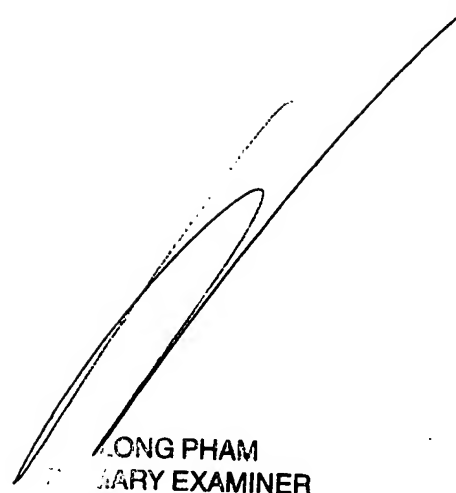
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/690,928

Page 7

Art Unit: 2814

Thao X. Le
30 Sept. 2005



LONG PHAM
MARY EXAMINER